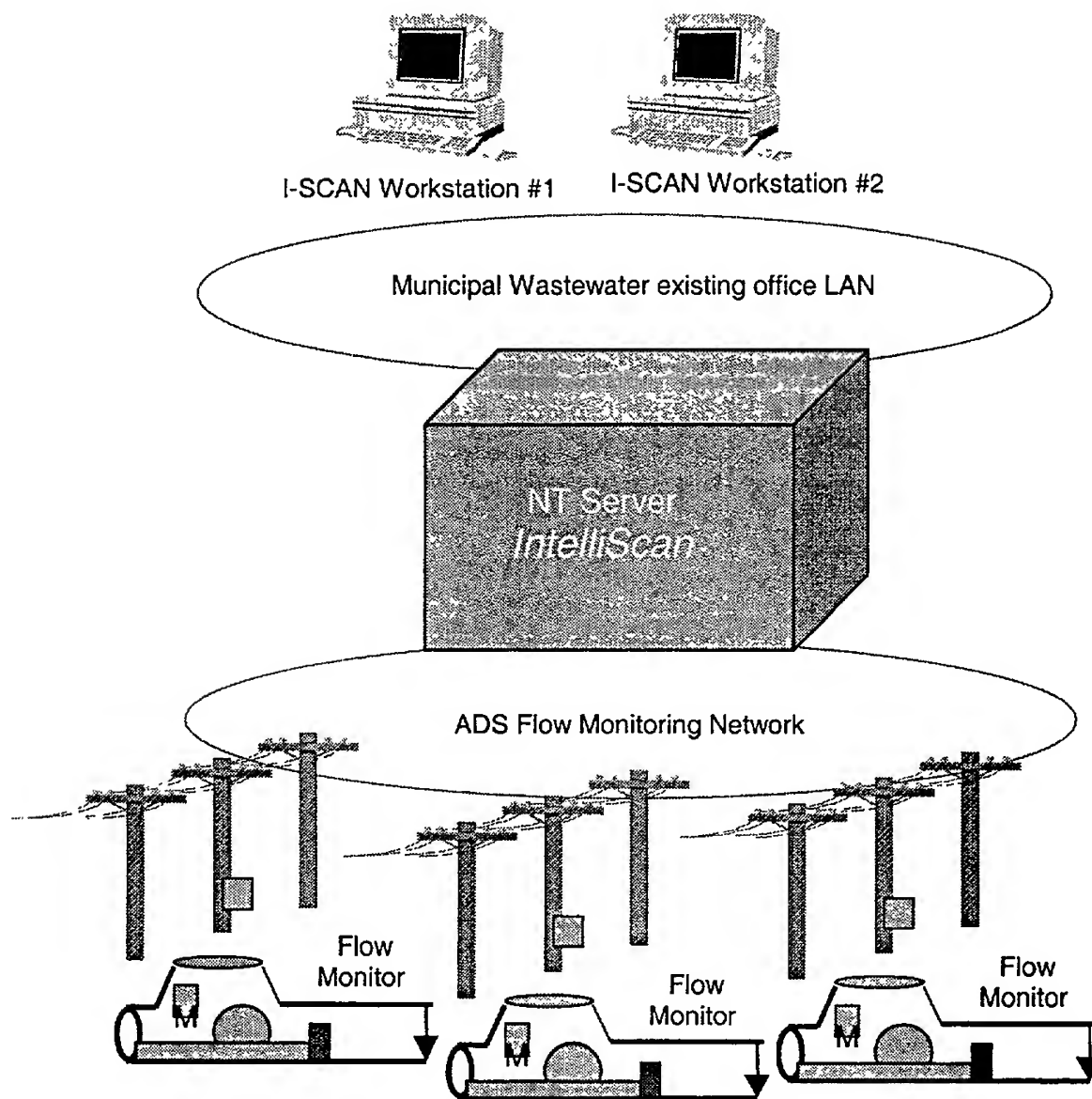


APPENDIX A

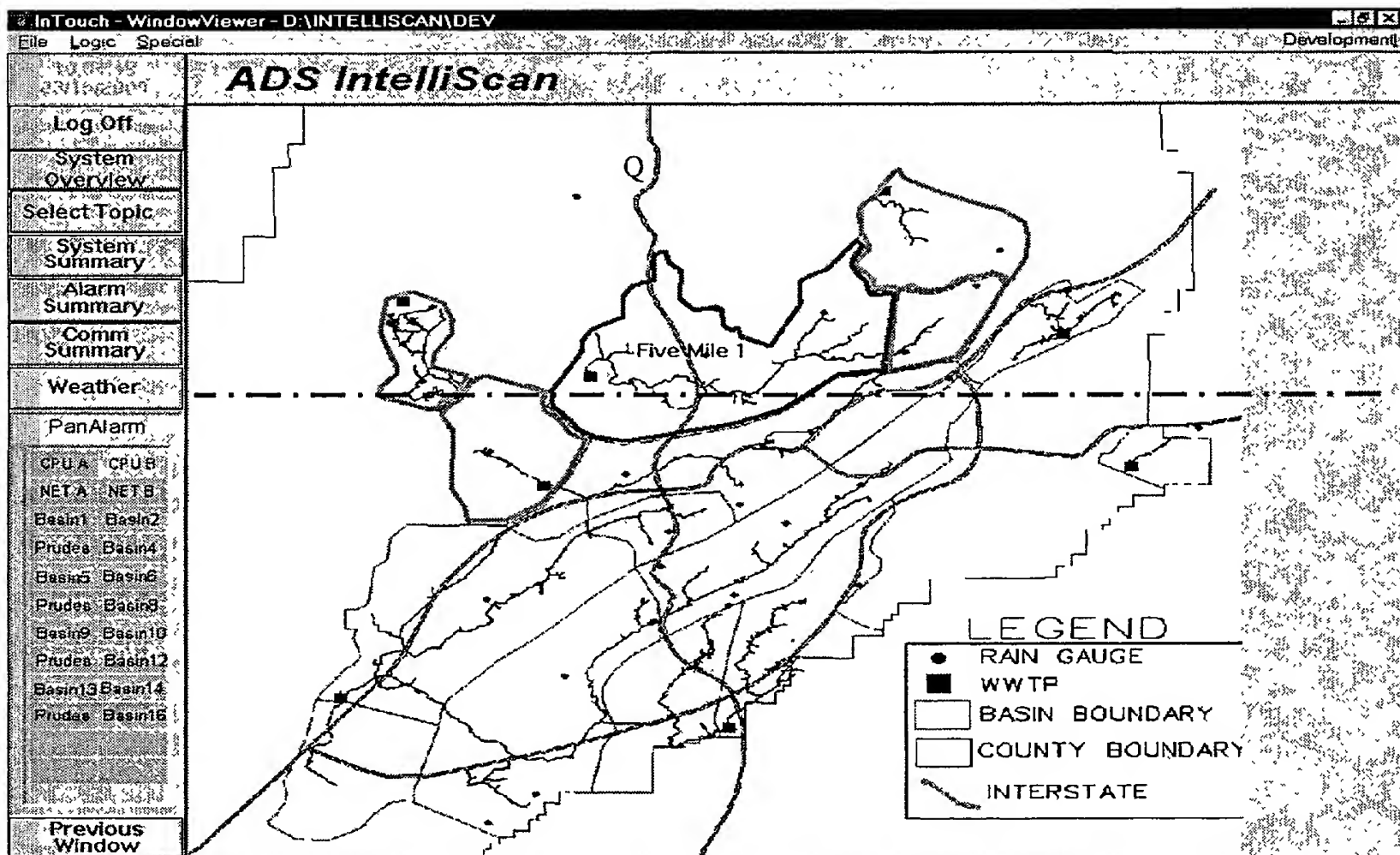
Network Plan Schematic



1.0 Display / Report Plan

The ADS IntelliScan FMAS, utilizes an object oriented, Graphical User Interface (GUI) based on Wonderware Intouch and the Microsoft NT 4.0® standard. This allows IntelliScan to scan and log remote flow sites, and gives the user the ability to visualize and analyze flow data graphically. The IntelliScan GUI is comprised of several components that provide visualization, historical trending, event handling, alarm logging, reporting and analysis tools. These features combine to create a complex and powerful operator interface, providing a point and click environment for ease of use. The following screen displays explain functionality associated with each particular screen in greater detail.

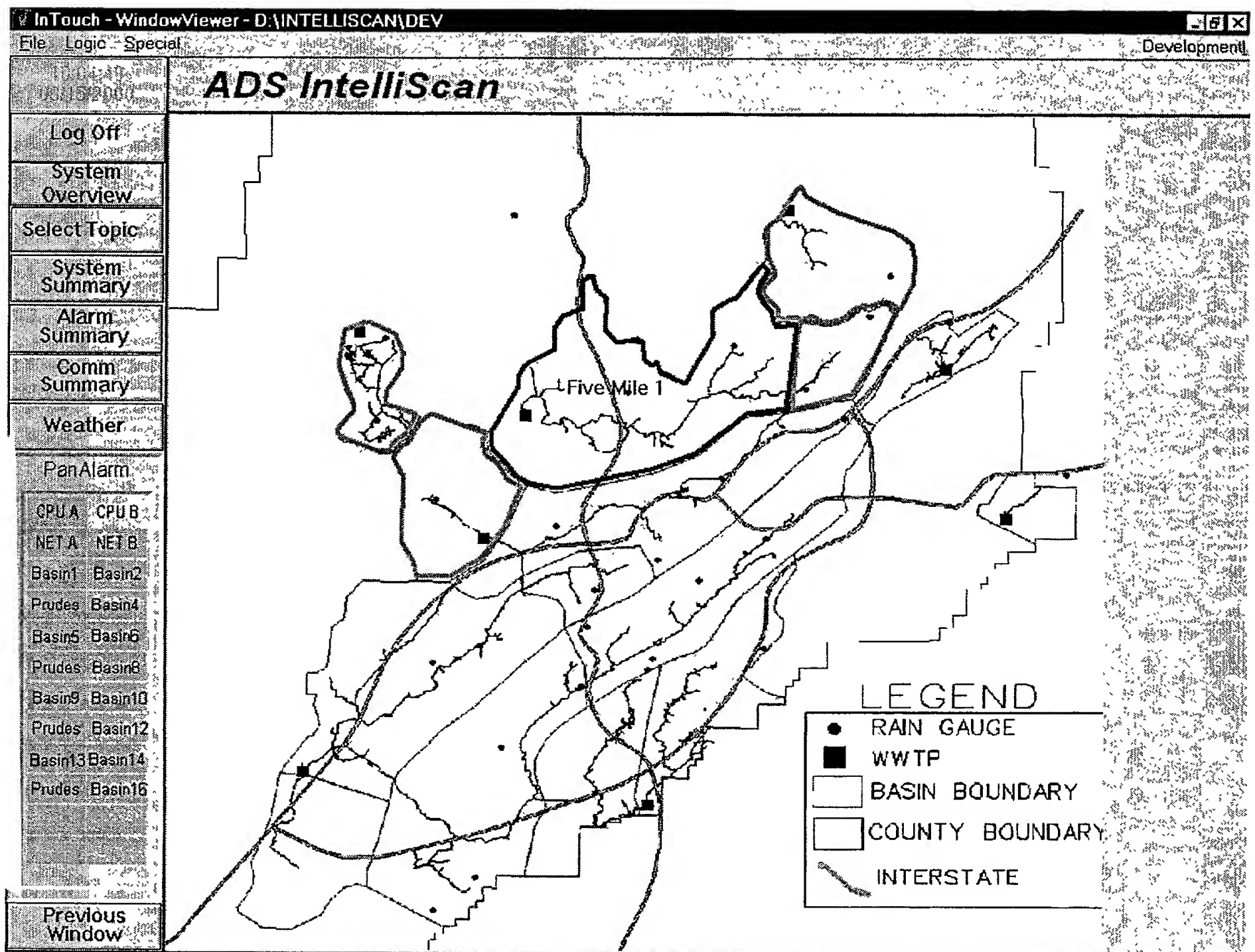
1.1 Navigation Template



Navigation Template- located on left hand side of each screen

- **Log On / Log Off** button allows the user to Log On and Log Off of the IntelliScan system
- **System Overview** button selects a county overview screen
- **Select Topic** button brings up a Select Topic window for Basin or Site selection
- **Alarm Summary** button brings up the Alarm Summary screen
- **Comm Summary** button brings up a Communications Summary screen
- **Weather** button brings up an internet browser with weather web site connectivity.

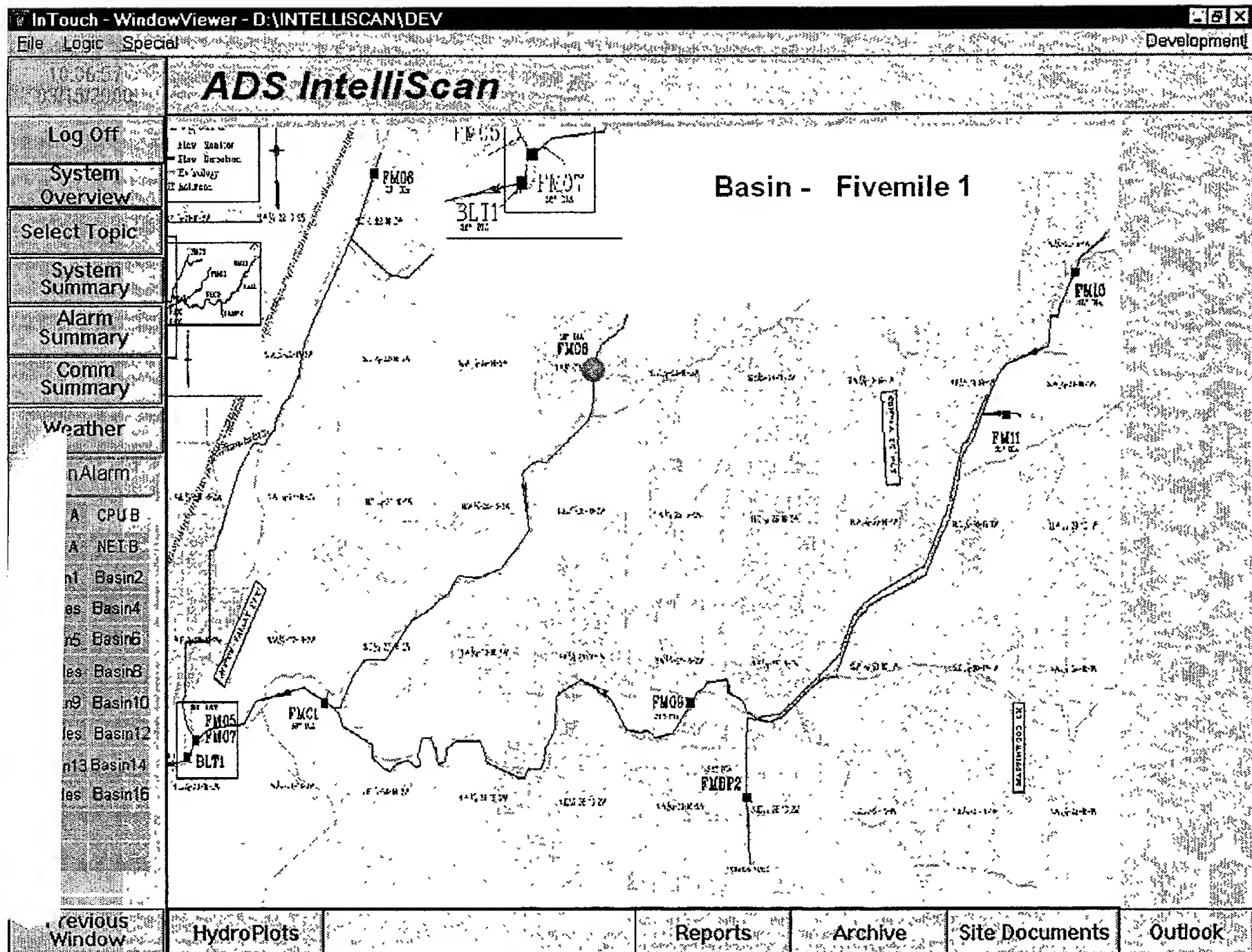
2.2 County Map Overview Screen



County Map Overview-

- This is the screen that is displayed upon initially logging into the Intelliscan system
- Provides an overview of all Basins in county
- Basins with **Green** outline indicate all sites within that Basin are within normal operating ranges
- Basins with flashing **Red** outlines indicate a site within in that Basin has an unacknowledged alarm
- Basins with solid **Red** outlines indicate that a site within that Basin has an acknowledged alarm
- Clicking on a particular Basin will bring up a **Basin Overview** screen

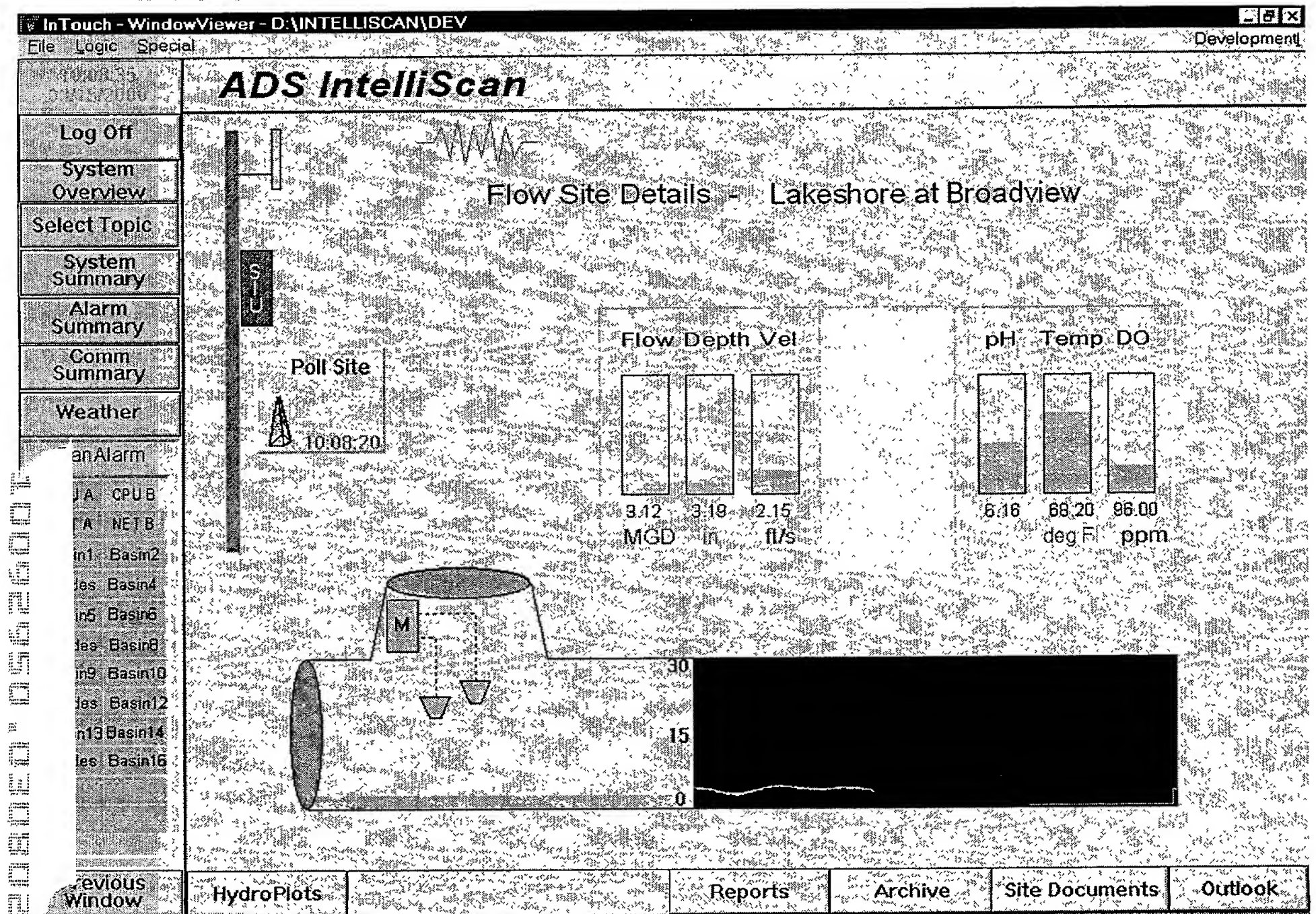
2.3 Basin Overview Screen



Basin Overview-

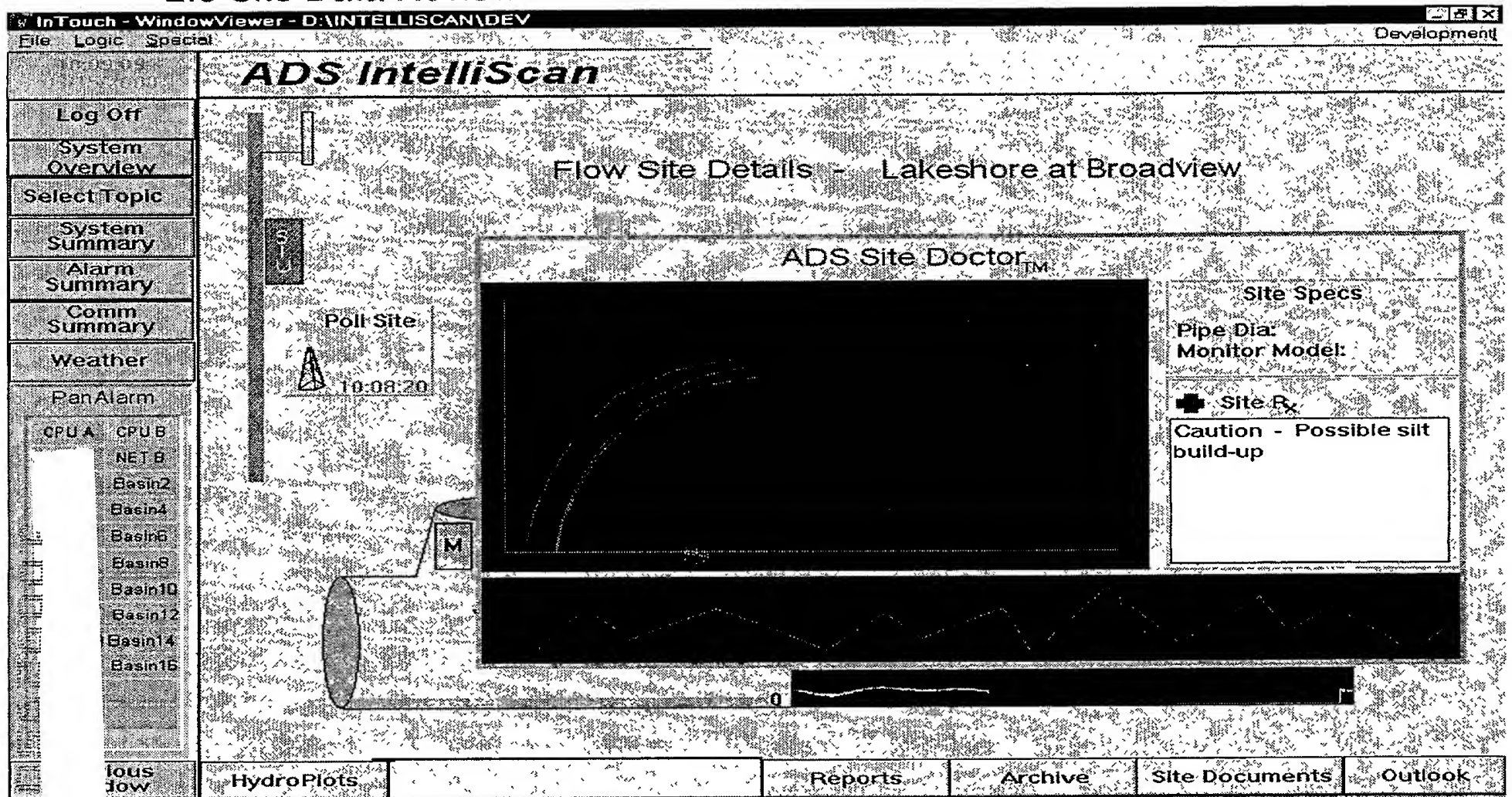
- Provides a map showing each Flow Site and its status within a Basin. The operator can click on any of these active sites and drill down to the specific site detail screen.
- Sites in an unacknowledged alarm condition will flash **Red**
- Sites in an acknowledged alarm condition will show in solid **Red**
- **HydroPlots** button launches **HydroPlot Screen** for ad hoc plotting
- **Reports** button launches the Report menu with options to select specific reports for view, edit or creation.
- **Archive** button launches a menu of databases for selection, view and editing.
- **Documents** button launches a document menu for document selection, view and edit.
- **Outlook** button launches Microsoft Outlook for E-Mail and other office functions.

2.4 Site Details



- Selection of a site icon while in the **Basin Overview** screen displays the specific **Site Detail Screen**.
- The **Site Detail** screen provides real time information about a specific site as well as a 24 hour site HydroPlot
- **Flow/Depth/Vel sliders** and integers provide site data from the most recent polling activity.
- **pH/Temp/DO Sliders and Integers** provide pH, Temp and Dissolved Oxygen information from the site if implemented. *Note: These Environmental Sliders will remained hidden unless the site selected is instrumented for these readings*
- **Poll Site** button launches a demand polling of the site. Upon initiation of a demand poll, a telemetry icon will travel across the top of the screen indicating telemetry system activity at that site. The Flow, Depth and Velocity values are returned from the monitor and displayed on the sliders and integers graphics.
- A graphical image of a sewer line with flow instrumentation is shown on the screen. This image provides current site depth visualization, alarm condition and contains a Hydroplot showing the last 24 hours of site information.

2.5 Site Data Review

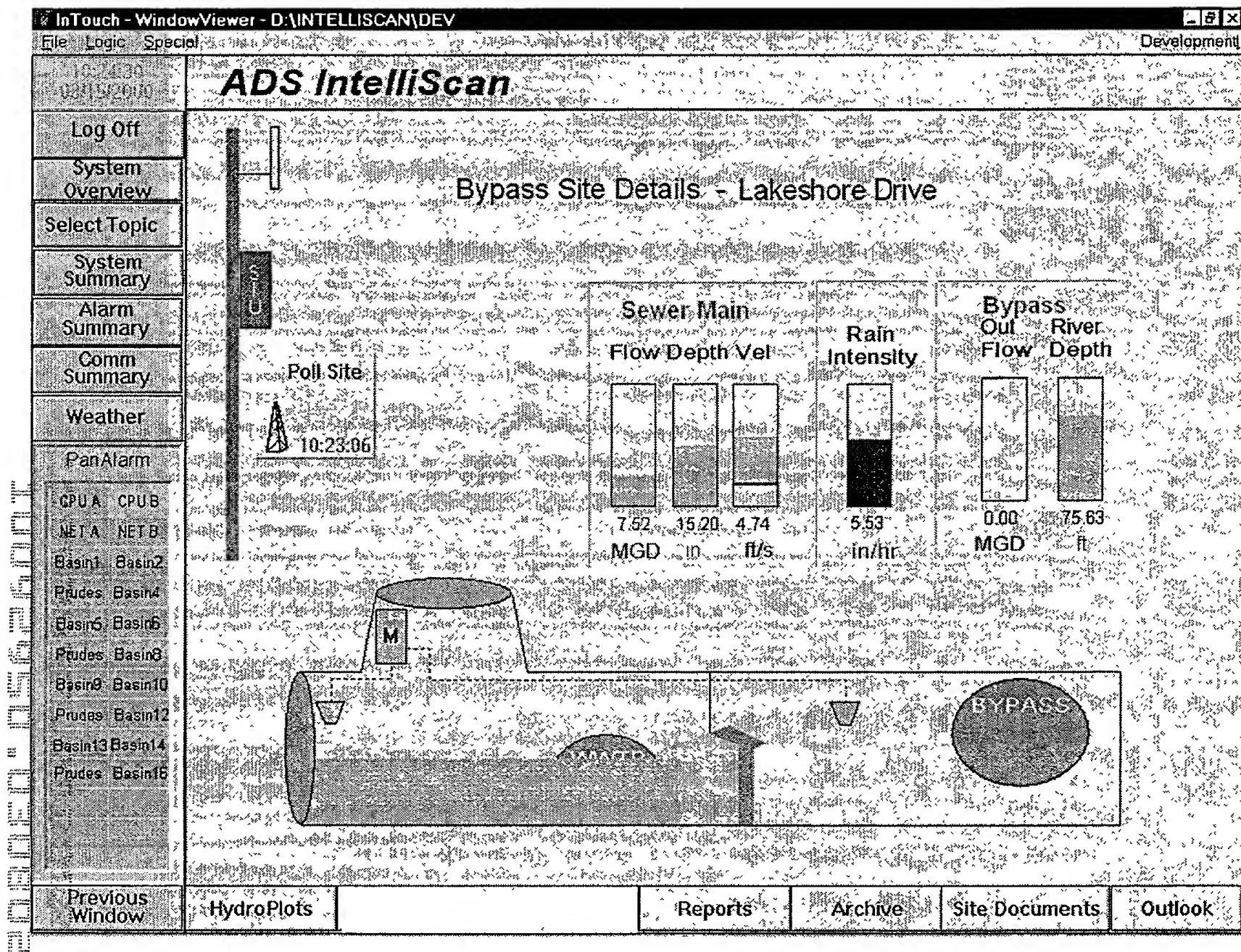


- Clicking on the Manhole Cover while in the **Site Detail** screen displays **Site Data Review**. **Site Data Review** screen provides the user with a thumbnail sketch of the flow performance and changing hydraulic conditions at each site. It also helps the user to assess flow monitor instrument health condition by displaying good points, flagged bad points and flow monitor battery health.
- A **Site Data Review** window will be displayed with two scatter plots and one hydroplot.
 - **Scatter plot #1** will display the relationship of site depth verses velocity. This site flow performance indicator is for the last 24 hours. This plot will contain good data points in green and flagged bad data points in red with a "Least Squares Curve Fit" line.
 - **Scatter plot #2** will display three "Least Squares Curves" without the data points. Scatter plot #2 will display changing site hydraulic conditions comparing 24 hours ago with 48 hours ago and the month's average.
 - **The Hydroplot** display will show a graph of sewer depth for seven days.

These plots can be used to analyze site hydraulics and performance.

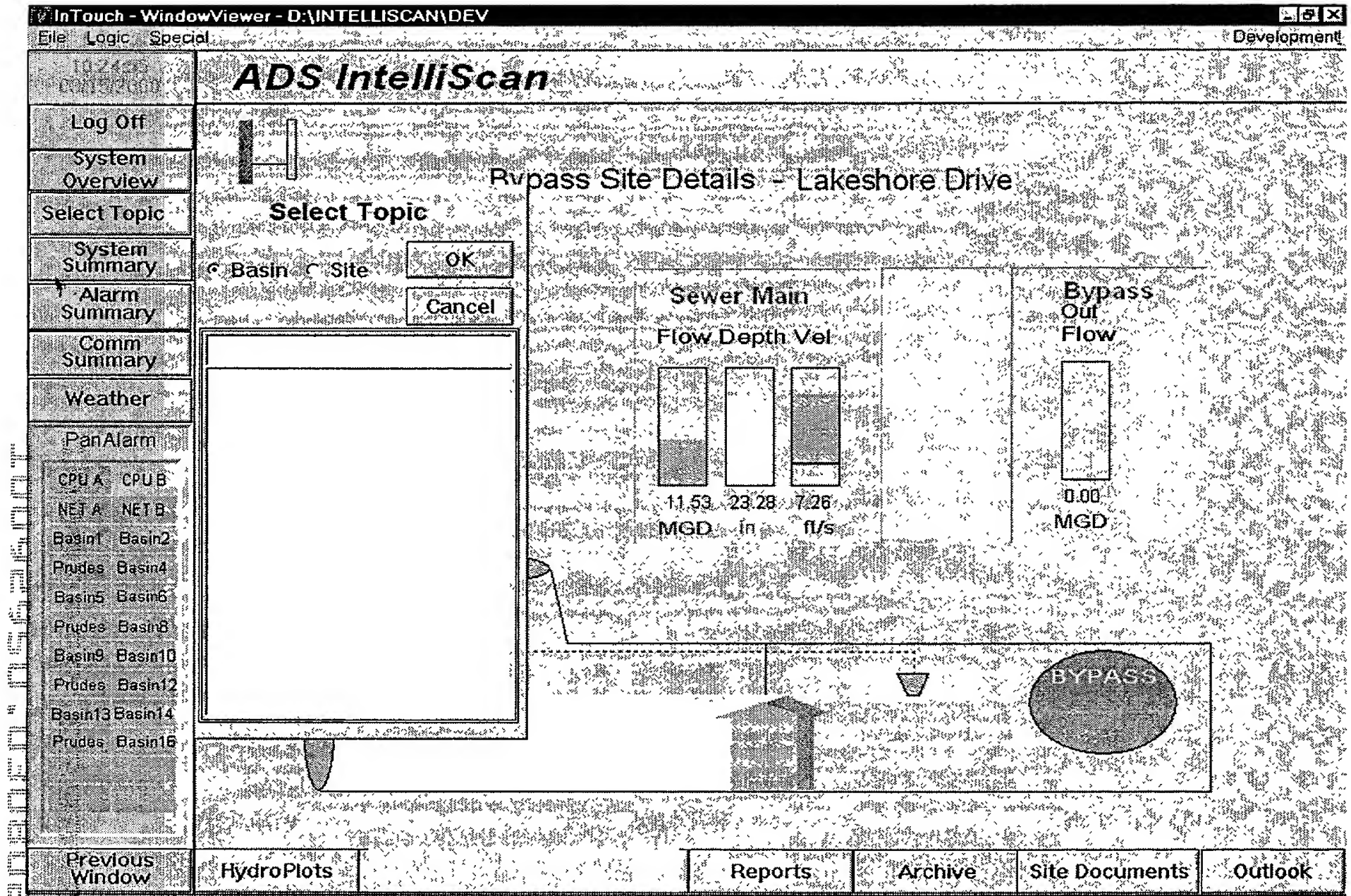
- **Site pipe specifications** will also be displayed in a Site Data Review window for dimensional and correction factor references plus battery voltage.

2.6 Bypass Site Detail Screen



- While in the **Basin Overview** screen, selection of a **Bypass Site** will bring up the **Bypass Site Detail Screen**.
- 3 graphics will be displayed:
 - The first graphic will display sliders and integers reflecting the real time condition within the Bypass Vault. These include flow rate, depth and velocity
 - The second graphic displays current rain activity as defined by any atAUCShed associated Rain Gauge
 - The third graphic displays the Bypass Outflow Rate and current River Depth if a stream gauge is atAUCShed
- A graphical display of the Bypass Site providing sewer main depth in relation to the Weir Wall and flow monitor instrumentation are also displayed
- Clicking on the Manhole Cover while in the **Site Detail** screen displays **Site Data Review**. The Site Data Review screen will be displayed showing Site Data Review Functions for that site.

2.7 Select Topic Function



- From the **Navigation Template**, located on the left-hand side of the screen, a **Select Topic Button** can be selected to display a topic selection menu.
- This window menu allows the user to view all of the site or basin names that are selectable and allows the user to select either a Site or a Basin for screen display.
- After selecting a specific topic from the menu, the user can either launch the specific topic screen using the "OK Button" or cancel the selection process by selecting the "Cancel Button".

2.8 Alarm Summary Screen

[illegible]

- When the **Alarm Summary** screen is selected from the Navigation Template, the **Alarm Summary Screen** appears and displays the following:
- **Priority Window** allows user to query Alarms by Priority.
- **Alarm Acknowledge Button** allows the user to acknowledge a selected active alarm.
- **Alarm Group Button** allows the user to query various alarm groups such as Basin or Lift Station Alarm Groups separately.
- **Operations Dispatch Button** allows the user to send a copy of the selected alarm via E-Mail to an operations or maintenance dispatch group.
- **Event Manager Button** displays the Event Manager pop-up window.
- **Event Log Button** allows the user to display the Event Log, which displays a historical summary of all events and alarms to date.

When the **Alarm Summary** screen is selected the **IntelliHMI** system will generate an Alarm Summary report and display it upon the screen. This report contains fields that provide the following alarm related information:

- Date of alarm
- Time of alarm
- Type of alarm
- Name of operator logged on whom acknowledges alarm
- Alarm priority
- Alarm name
- Alarm group
- Alarm value
- Alarm limit

2.9 Event Manager Pop-Up Window

Event Manager

Site Selection

SDIA
SD1B
SD1CM
SD1D
SD1E
SD1F
SD2A
SD2B

ScatterPlot

V

D

☐ Upper vel. threshold
(\pm at 10 FPS)

☐ Lower vel. threshold
(\pm at 1 FPS)

Hydrograph

D- High

Q- Low

T

☐ High Depth Limit

☐ Low % Daily Average Q

SDR Enabled ☐

The Event Manager pop-up window provides the user with a point and click environment for:

- Setting alarm limits for IntelliScan based alarm functionality
- Enabling/Disabling Site Data Review for specific sites

2.10 Event Log Screen

The screenshot shows the ADS IntelliScan software interface. The window title is "InTouch - WindowViewer - D:\INTELLISCAN\DEV". The interface includes a menu bar (File, Logic, Special), a sidebar with navigation options (Log Off, System Overview, Select Topic, System Summary, Alarm Summary, Comm Summary, Weather, onAlarm, A CPU B, A NET B, n1 Basin2, les Basin4, n5 Basin6, les Basin8, n9 Basin10, les Basin12, n13 Basin14, les Basin16, Previous Window), and a main area titled "Event Log".

The Event Log section has filters for Event Priority (From: 1, To: 999) and Event Group (All), with Print and Clear buttons. A table displays event data with columns: Date, Time, Pft, Cmt, Name, Group, Val, Limit. The first row shows "15 Mar 2000", "09:59", "599", an empty comment, "Operator", "EventAll", "Hamil", and "Hamil".

A status bar at the bottom indicates "Update Successful".

- When the **Event Log Button** is selected in the **Alarm Summary Screen**, the **Event Log screen** is displayed.
- **Event Log Priority Button** allows the user to query events by priority for display.
- **Event Log Group Button** allows the user to query specific event groups for display such as all alarms associated with a specific Basins or Lift Stations.
- **Print Button** is provided to dump the Event Log to a printer on the network.
- **Clear button** is provided to enable clearing of the Event Log with security password.
- When the **Event Log** screen is selected the **IntelliHMI** system will generate an Event Log report and display it upon the screen. This report contains field that provide the following event related information:
-Date of event - Time of event - Event priority - Operator generated comments about the event - Event name - Event group - Event value - Event Limits

2.11 Communications Summary Screen

InTouch - WindowViewer - D:\INTELLISCAN\DEV

File Logic Special Development

ADS IntelliScan

Communications Summary

Poll Site: Site Name:

10:15:32

Clear Buffer

AUCS

Close

Break	0	Cry Out	0
Frame	0	Errors	0
Parity	0	UART Errors	0
Rx Over	0	Protocol Errors	0
Tx Over	0	Queued Reads	0
Time Out	0	Queued Writes	0
No Response	0	Single Write	OFF
CRC	0	Interval	0
Echo	0	Retries	0
Extra Character Count	0	Pause	Disabled
Extra Character Event	0	Status	FAILED
Queries	0	% Good Polls	0
Good Response	0	% Good Tries	0
Character Send	0	Last Poll	
Character Receive	0		

Telephone Test

Radio Test

Alarm Test

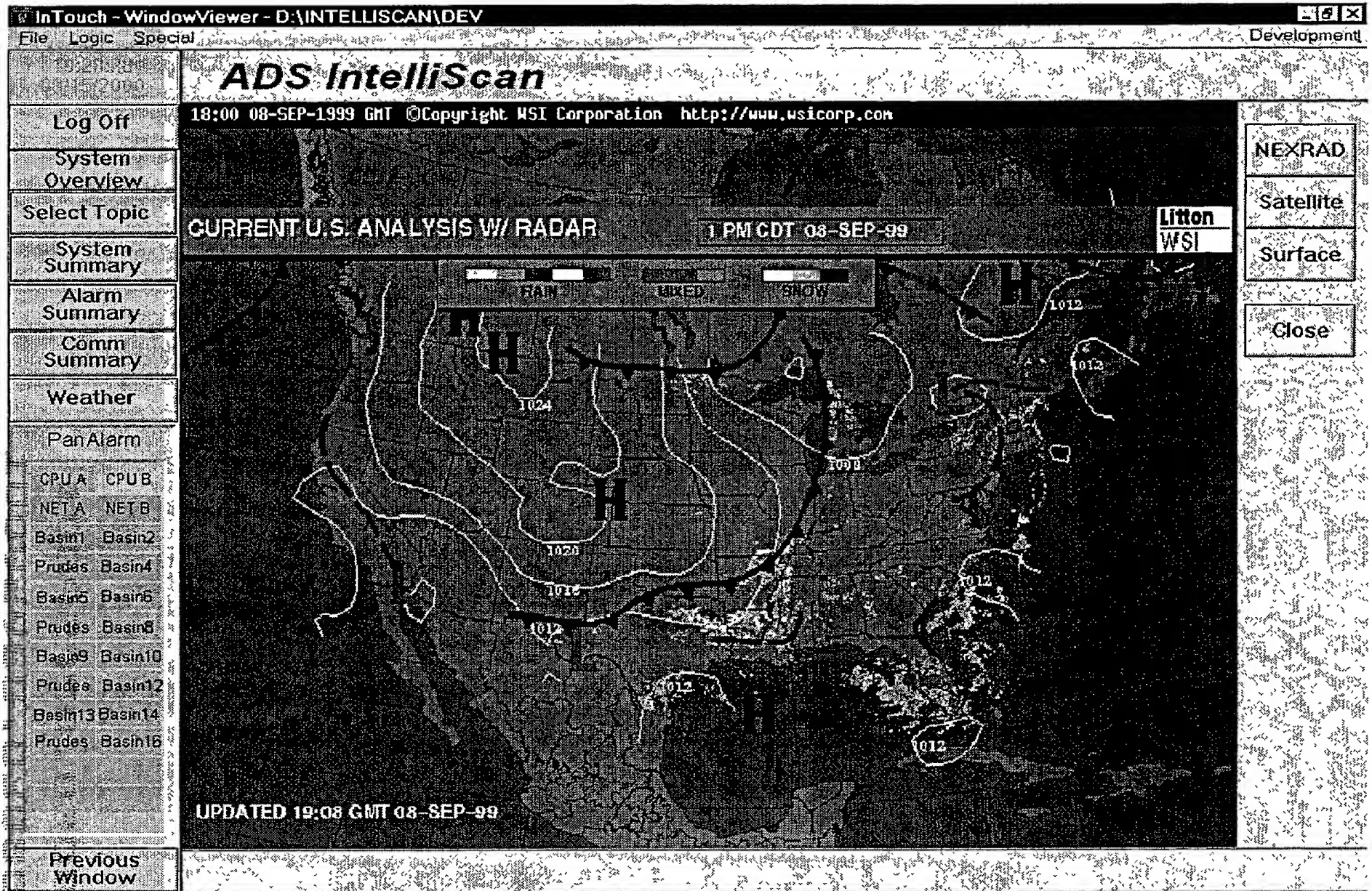
Monitor Setup

RTU Setup

Previous Window

- When the **Communication Summary** screen is selected from the **Navigation Template** the **Communication Summary screen** is displayed.
- This screen provides a pull down summary of telemetry statistics for each site.
- A **Poll Site** button is provided allowing demand polling of the selected site.
- A **Clear Buffer** button is provided to allow user clearing of the Communication Summary buffer
- An **AUCS** (ADS Universal Communications Server) button is provided allowing access for configuration of AUCS telemetry for each site
- A **Close** button is provided allowing the user to exit the Communication Summary screen
- After a selected site is polled Intelliscan provides a detailed analysis of communication characteristics between Intelliscan and the selected site.
- A **Telephone Test** button is provided to allow testing of phone system attributes for landline communication systems.
- A **Radio Test** button provides for testing of communications to any site connected to Intelliscan via Spread Spectrum Radio.
- An **Alarm Setup** button is provided to allow configuration of the Win911 Paging card.
- A **Monitor Setup** Button is provided to launch ADS QuadraScan for calling the flow monitor for instrument configuration, maintenance and analysis purposes.
- An **RTU Setup** Button is provided to launch the ADS SCADA Interface Unit configuration and maintenance routine. Note this routine is not currently in the scope of work and will produce a pop-up stating "FUNCTION NOT IMPLEMENTED"

2.12 Weather Map Screen



- When the **Weather** button is selected from the **Navigation Template**, a Microsoft Explorer Internet Browser screen will be launched within the IntelliHMI application. This browser screen will auto log-on through the City's ISP to IntelliCast.Com. The user will be able to navigate thru IntelliCast weather displays for the local and national region.

2.13 Document Screen

Microsoft Excel - SiteSpec.xls

File Edit View Insert Format Tools Data Window Help

Arial 10

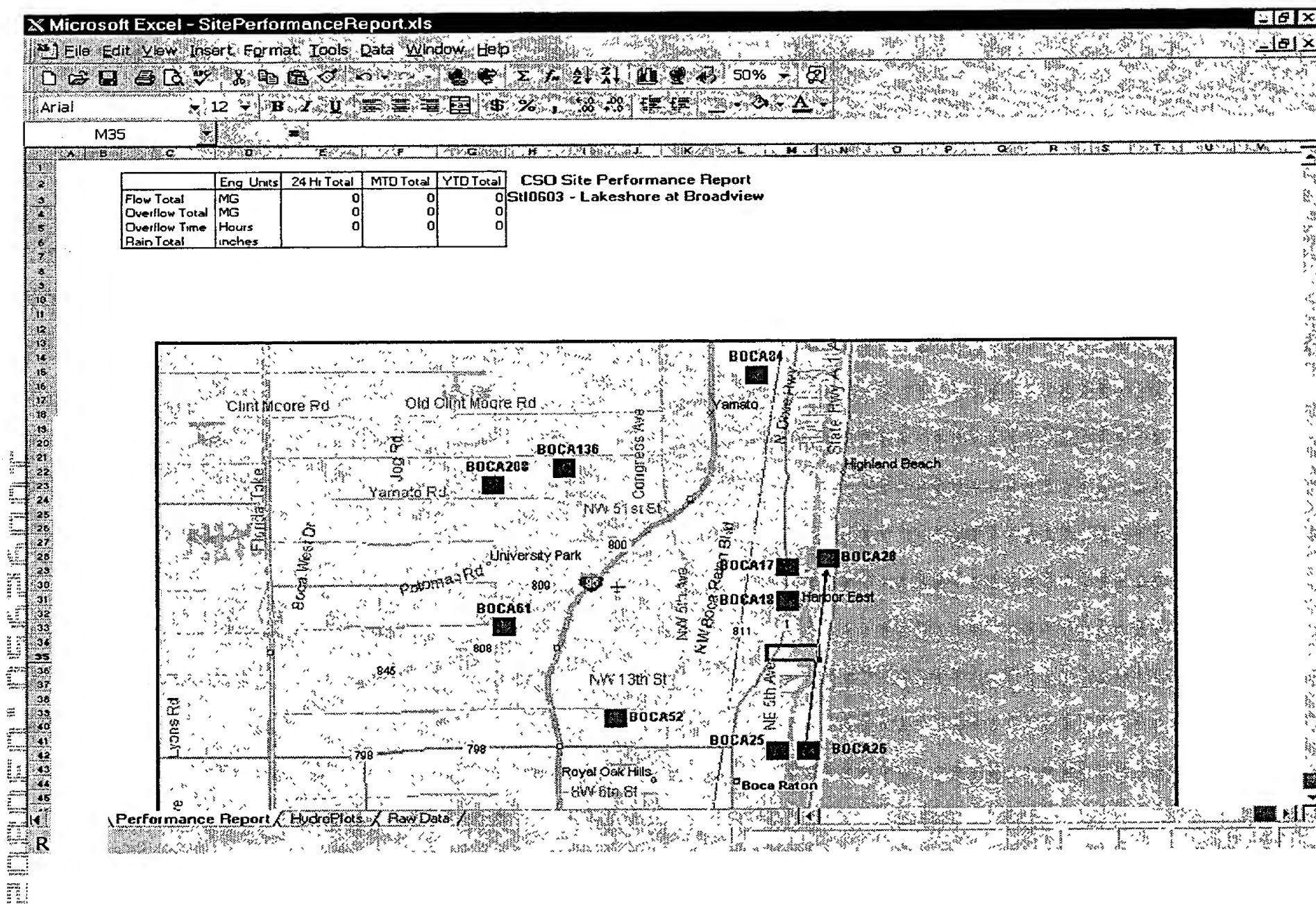
R7

ADS		3500			
Environmental Services, Inc.		Site Report		REWARD IF FOUND - (206) 430-3361	
Project/Phase	Seattle	Date	03/18/1999	Name	RKW
Address/Location	Behind 9501 Secretariat				
Walk between 9501 and 9503					
Access:	Drive / walk 50 yards				
Sheet2 / Sheet3 /					

Manhole #	AN	Monitor
	STL0607	
V-Sensor #	Bat Serial #	Press X
Dist. to X-ducer	Physical Offset	Diameter
		17.5" x 17.5"
INSTALLATION Ring and Crank, 12" up pipe		
Ultrasonic		
Pressure		
Velocity		
SAFETY		
Manhole Depth	12'	
Traffic	none	
Gas @ Investigation	neg	
Manhole Condition	Excellent	
	Good rungs	

- When the **Document Button** is selected from the **Function Bar** (at the bottom of most IntelliScan screens) a Document Menu will appear. The user will be allowed to select from a list of documents and launch specific documents with their editors or viewers.
- The Site Report contains detailed information regarding each specific flow site. This information includes geographical location of the site, monitor type, serial number, installation date, installation details, phone number, ID number, field personnel comments, etc.

2.14 Report Screen



- When the **Report Button** is selected from the Function Bar, a menu pop-up of available reports is displayed. The user is allowed to select a report of choice and launch the report with it's Microsoft Excel Editor.
- In the above graphic, a Site Performance Report is launched and the Microsoft Excel editor starts building the report from the **IntelliSQL Archive / Retrieval System**. Once the report is fully constructed, the user can view the following:
 - **Sheet # 1** – Site flow summary with graphics for last 24 hours.
 - **Sheet # 2** – Site or Basin Summary Plots
 - **Sheet # 3** – Site or Basin Raw Data in Spreadsheet format. Note this data can be edited, selected, copied or even linked to other spreadsheets automatically.

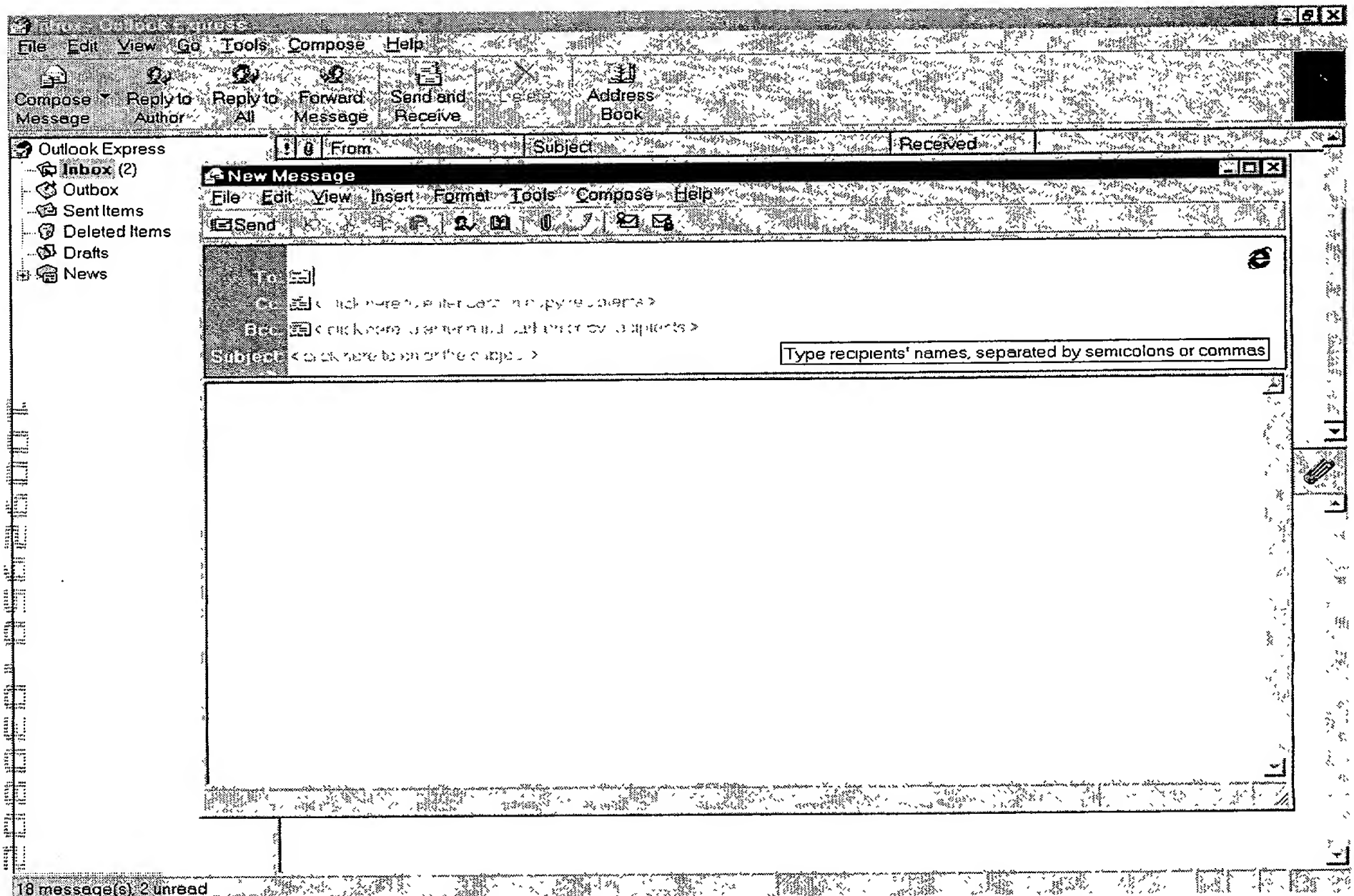
2.15 IntelliSQL Archive / Retrieval System

The screenshot shows the Microsoft Access application window with the 'SiteDataQueryForm' open. The form includes a 'Location' dropdown menu set to '500603', 'Start Date/Time' set to '10/8/1999 12:20:33', and 'Stop Date/Time' set to '3/15/2000 12:20:33'. Below these fields is a table with four columns: 'Date/Time', 'FlowDepth', 'FlowRate', and 'FlowVel'. The table contains 14 rows of data. At the bottom of the form, it indicates 'Record 14 of 44325'.

Date/Time	FlowDepth	FlowRate	FlowVel
10/08/1999 12:28:25	0	0	0
10/08/1999 12:28:27	3.19	1.57905	0.99528
10/08/1999 12:28:29	3.23609	1.601864	1.00966
10/08/1999 12:28:31	3.214789	1.591321	1.003014
10/08/1999 12:28:33	3.198024	1.583022	0.9977834
10/08/1999 12:28:35	3.226061	1.5969	1.006531
10/08/1999 12:28:37	3.208251	1.588084	1.000974
10/08/1999 12:28:39	3.306637	1.636785	1.031671
10/08/1999 12:28:41	3.27547	1.621358	1.021947
10/08/1999 12:28:43	3.242931	1.605251	1.011794
10/08/1999 12:28:45	3.26444	1.615898	1.018505
10/08/1999 12:28:47	3.190558	1.579326	0.9954541

- When the **Site Data Query Form** is selected from the Archive / Retrieval Menu Pop-up, IntelliScan launches the Microsoft Access County Database query editor.
- This **Site Data Query Form** provides a pull down menu to select specific site locations for the query, date range and time range to be entered.
- When the Site Data Query is initiated the Archive/Retrieval system is accessed and a report with the following site data is generated;
 - **Site** queried
 - **Date/Time** of query
 - **Flow Depth** at selected site
 - **Flow Rate** at selected site
 - **Flow Velocity** at selected site

2.16 Outlook Screen



- When the **Outlook function** is selected from the Function Bar, IntelliScan launches Microsoft Outlook. The user then has full control of Outlook's features for scheduling, phone directories, E-Mail functions and other office like personal productivity tools.

3.0 Archive / Retrieval System

3.1 Overview

The Archive / Retrieval System allows a user, with appropriate access levels, to view and retrieve system data in multiple formats. These formats include but are not limited to alarm history data; minimum and maximum flow data for the entire system, basins or sites; flow data relative to specific times or dates, etc. The Archive / Retrieval System is fully customizable to develop customer specific reports. This feature provides a powerful tool for analysis overall system performance, basin performance, or individual flow site performance.

3.2 Database Structure

The Intelliscan System utilizes a Microsoft SQL® database for Archive / Retrieval functions. This database is ODBC compliant and configured for asynchronous data transfer. Within Intelliscan™, The IntelliCOM module, which facilitates communications with field sites, will be the primary mechanism that populates the database with field information. Site Data Review will also access the database and will populate certain fields during specific Intelliscan™ functions, as well. User access to the Intelliscan™ database is gained through one of two workstations provided.

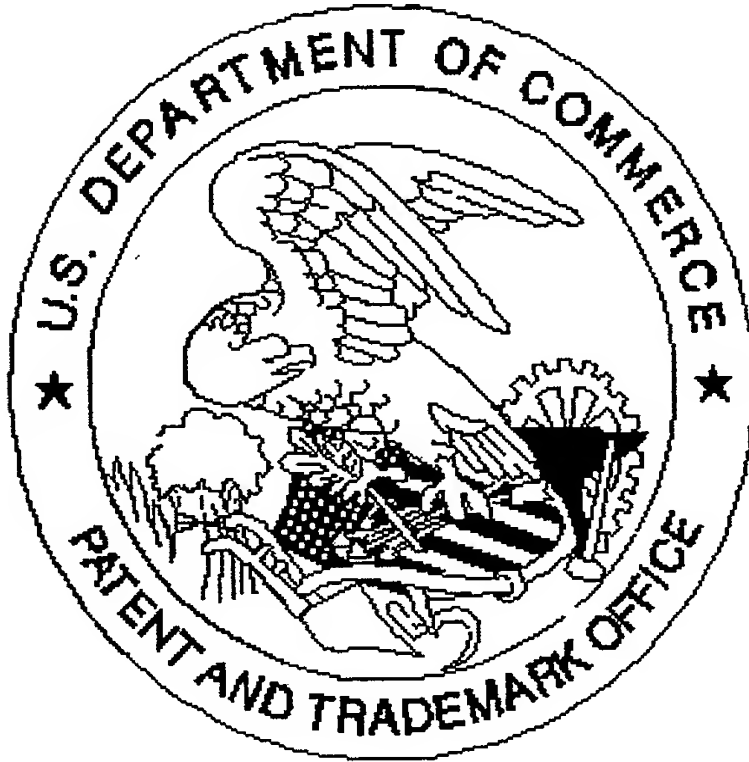
3.3 Site Data Logging Plan

Intelliscan™ will be accessing over sixty five flow/data sites for The City of San Diego. In addition to demand scans and timed scans of these assets, daily site logging will be accomplished. During site logging the Intelliscan™ server will dial each site within a basin via a modem mux and upload site data into the Archive / Retrieval System. This daily logging activity will be timed and coordinated to occur during minimum system usage hours.

3.4 Report Generation

Intelliscan™ will access the Archive / Retrieval System for report generation. Reports will be displayed in a Microsoft Excel® format. The report generation functions of Intelliscan™ are fully configurable to allow custom reports to be generated to support any user needs. The ability to custom configure data from the Intelliscan™ database and present it in a user defined report structure provides a powerful analytical tool for proactively managing sewer and wastewater assets.

United States Patent & Trademark Office
Office of Initial Patent Examination -- Scanning Division



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for scanning. (Document title)

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dark.